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CITY OF FALLON
OFFICE OF THE
MAYOR

KEN TEDFORD, JR.
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Mr. Lake H. Barrett, Acting Director
Office of Civilian Radioactive Waste Management
Department of Energy
Washington, DC 20585

COMMENTS OF THE CITY OF FALLON, NEVADA ON YUCCA MOUNTAIN

Dear Mr. Barrett:

To frame the public comments offered below by the City of Fallon, the city wishes to state that it is aware of a great irony embedded in the fact that it has been called upon to comment on the potential safety of an engineering project which much be constructed ensure the safe storage of radionuclides such as plutonium for a minimum of 10,000 years. The entire world can lay claim to "building," or engineering structures for less than 5000 years, and the City of Fallon has existed for fewer than 100 years. This simple fact informs the commentary which follows.

1. *Please provide your views concerning whether the Yucca Mountain Preliminary Site Suitability Evaluation (PSSE) and other scientific documents produced by the Department provide an adequate basis for finding that the Yucca Mountain site is suitable for development of a repository. If you believe that certain aspects of the PSSE are inadequate, please detail the basis for this belief and indicated how the documentation might be made adequate with respect to these aspects*

The documents produced to date, including the PSSE and the Draft EIS are not adequate in assessing the suitability of the Yucca Mountain site for development of a repository. In both the PSSE and the Draft EIS, the DOE has relied heavily on TSPA modeling to assess the performance of the engineered barriers and storage canisters. The PSSE states that "There are recognized limitations to TSPA models and the ability to forecast the future behavior of the potential geologic repository system," (xxvii), a statement we not only concur with, but contend might became the "fatal flaw" in the siting process. The Total System Performance Assessment, relies on hypothetical events and forecasts of future environments which may, or may not,coincide with actual future events. Such hypothetical events and forecasted scenarios are

then fed into the computer models programmed to predict peak mean annual doses of radioactive releases from the repository.

The "recognized limitations" of TSPA models can be highlighted briefly by a anecdote. James Gleick in his respected book *Chaos* retells the story of meteorologist Edward Lorenz and his experiments with weather modeling on a computer. One day in the winter of 1961 Lorenz took a shortcut and reduced six decimals (.5066127) to three (.506). He assumed that the difference was inconsequential, but the resulting printout of a weather forecast stunned Lorenz and led to the theory known as of "The Butterfly Effect." In reality what he discovered was that computers--and natural chains of events "can have a point of crisis that could magnify small changes... such points are everywhere." The implications for Yucca Mountain research are quite clear. Computer modelers may cut a decimal or two, resulting in the prediction of a vastly different scenario from what might result by way of different decimal input. Or nature herself, at least one small element of her, may reach "the point of crisis" from which small changes magnify in one direction or another, veering sharply from the best laid plans of science and computer. Over short periods of time the risks of Lorenz' theory are small, but when 10,000 years must be " printed out," the risk becomes considerable.

The problem of performance assessment based on hypotheticals is exacerbated by the fact that canister design and drip shield design is still evolving. Any modeling is premature without the input of the actual design criteria. We are concerned about the use of the design evolution concept of DEIS and PSSE, and contend that TSPA models should rely on actual design features, not evolving plans to design canisters and shields that will perform to meet the criteria. The DEIS and PSSE are filled with the use of future tense language rather than descriptions of shelf technology. We do not believe the statement on page xxi that an Alloy 22 waste package "will last well beyond the 10,000 -year regulatory compliance period" has been adequately supported by documentation and that considerable doubt remains about package integrity and design. This kind of doubt must be resolved by more thorough testing and experimentation with shield and canister design. It is well-known that Swedish repository research has focused on this key safety factor and that most European repository programs are dedicated to thorough testing of canister fabrication over considerably more time than DOE has allowed.

The documentation is further deemed inadequate by virtue of the fact that no final EIS statement has not been issued. Problems noted by both expert analysis and public comment have not been addressed, and the opportunity to review a final EIS has not been made available.

The potential impact of Yucca Mountain on the city, state, and nation is too serious for reliance on the dose forecast models referred to in the PSSE. Instead, much more thought should be devoted to many of the scenarios dismissed as insignificant: volcanism, human intrusion, seismic events, widespread canister failure and criticality. Worst case scenarios are not analyzed with dose calculations. Rather than dismissing the risks of earthquakes and volcanos as statistically insignificant, we would like to see the results of the unanticipated event. The recent

events of September 11 make all too clear the possibility that worst case scenarios and threats dismissed by "experts" as negligible could manifest as reality. The documents produced by the DOE have consistently downplayed or dismissed cosmic events, human intrusion and terrorism at the repository site.

2. If the Secretary determines that the scientific analysis indicates that the Yucca Mountain site is likely to meet the applicable radiation protection standards established by the Environmental Protection Agency and Nuclear Regulatory Commission, do you believe that the Secretary should proceed to recommend the site to the President at this time. If not, please explain

Until a final EIS Statement is issued commenting on recommendation based on scientific analysis is premature. The analysis is not exhaustive enough to date to support a recommendation, nor have public concerns been addressed.

3. Are there any reasons that believe should prevent the President from concluding that the Yucca Mountain site is qualified for the preparation and submission of a construction license application to the Nuclear Regulatory Commission.

Yes. There are several reasons.

The first reason is DOE's reliance on what K.S. Shrader-Frechette calls "problematic inferences in assessing repository risks." After analyzing inferences applied to future canister performance, future geologic performance, and future human performance, she concludes that "Drawing a positive conclusion about the safety and effectiveness of radwaste storage at repositories like Yucca Mountain--given a variety of unknowns regarding methodological value judgments, data, and hydrogeological theory--is not only logically invalid by empirically questionable."

The second reason is that the world changed on September 11. Inferences based on probable behaviors of rogue nations or terrorists must be adjusted to reflect the post-September 11 reality. The President must now assess Yucca Mountain in light of its performance as a terrorist target. Transportation issues must be revisited as well. Any rush to a construction license, given the new world we live in, would be viewed by us as premature, if not irresponsible.

4. If you believe that the Secretary should not proceed with a recommendation to develop a repository at Yucca Mountain, what mechanism should be utilized to meet the Department's legal obligation to begin accepting spent nuclear fuel and high level radioactive waste. (This question will be combined with the next regarding measures for assuring safe disposal of spent nuclear fuel and high level radioactive waste.)

To even weigh "legal obligations" against unacceptable risks is irresponsible. If the likelihood were established that canisters might fail or that terrorists had targeted transportation routes of high level waste, the "legal obligations" would pale in comparison to the duty to ensure safety. Congress has the responsibility to address "legal obligations" in the light of unacceptable risks.

By the terms established early in this commentary, that is, the necessity for absolutely secure storage of high level wastes for eons of time, and given the uncertainties of the PSSE approach, and given the fact that dry cask storage can be monitored and safely achieved, and given the events of September 11, the City of Fallon proposes a moratorium on a repository licensing application coupled with payments to utilities which will render on-site storage profitable and feasible. Transportation of high-level waste should be suspended and security increased at utility sites, a measure which has already been initiated by the Department.

Regards,

Ken Tedford Jr.

Ken Tedford, Jr.
Mayor

KT/bas
cc: Governor Kenny Guinn
Chief of Staff Marybel Batjer